REMARKS

Reconsideration in view of the foregoing amendments and the following remarks is respectfully requested. Moreover, the applicants have reviewed the First (Non-final) Office Action of September 4, 2007, and submit that this paper is responsive to all points raised therein.

I. Status of the Claims

Claims 1-52 are pending in the instant Patent Application.

Claims 1 and 18 have been amended substantively, and are discussed below. Support for the amendments to these claims is found, for example, in the drawings in FIG. 1.

Claims 4, 5, 10-12, 14-16, 19-21, 24, 25, 26, 27, 30, 32, 33, 37-44, and 46 have been amended for clarity and consistency, including correcting for antecedents and/or grammar, or eliminating unclear language. These claims have been amended for formalities only, and the amendments are not substantive in any way.

New claims 48 and 49 have been added to provide further limitations to claims 1. Support for these claims is found, for example, paragraphs 0006 and 0049-0054, in the specification.

New claims 50 and 51 have been added to provide further limitations to claims 1 and 18, respectively. Support for these claims is found, for example, in the drawings in FIG. 1.

New claim 52 has been added to eliminate alternate language from claim 25. Support for this claim is found, for example, in former claim 25, from which it is based.

Claims 22, 23, 28, 29, 31 and 34-36 have been cancelled, as per an election made in the Applicants' previous paper. The withdrawal of these claims was indicated in the First (Non-final) Office Action, which is being responded to by this paper.

II. Claim Objections

Claims 18, 20, 21, 24 and 40 were objected to for various reasons.

These claims have been amended, in many cases, in accordance with the Examiner's suggestions in the Office Action. It is respectfully asserted that these amendments cure these objections, such that these claims are now in proper form.

III. Rejections Under 35 USC 112, Second Paragraph

Claims 33 and 43 were rejected under 35 USC 112, second paragraph. Claim 33 was determined to be omnibus and claim 43 was unclear for multiple reasons.

Claim 33 has been amended to be in proper Markush form, so as to no longer be omnibus.

Claim 43 has been amended to eliminate the "optimal" language, to clarify the "two objects" and the relationship between the method recitations.

It is respectfully asserted that these amendments overcome the rejections under 35 USC 112, second paragraph, whereby these claims are now proper under 35 USC 112, second paragraph.

IV. Rejections Under 35 USC 102(b)

Claims 1 and 2 were rejected under 35 USC 102(b), as anticipated by Anagnostopoulos (U.S. Patent No. 4,079,422) (Anagnostopoulos '422).

Claim 1, as amended, recites a method for detecting changes in a spatially nonuniform optical intensity distribution comprising driving current through one or more areas of photoconductive material by at least one pair of electrical contacts that are beyond the one or more areas of photoconductive material, while incident optical radiation illuminates the one or more areas of photoconductive material, and measuring the voltage across the one or more areas of photoconductive material with at least two other electrical contacts.

Anagnostopoulos '422, is directed to charge injection through capacitive gates. As per the cited Fig. 2a, this reference discloses a pixel readout technique where light causes holes to form in an N-type semiconductor with minority carriers flowing into the depletion region under gate X. With the processing electronics being activated, current

causes the minority carriers to shift the depletion region under gate Y. This occurs in a single photoconductive area, with the X and Y gates within this single photoconductive area. Accordingly, the flow of charge is by light or current, but not both.

This is in contrast to the claimed subject matter, that utilizes the coupling of voltage across the area(s) of photoconductive material from the electrical contacts with incident optical radiation illuminating the area(s) of photoconductive material to drive current through the area(s) of photoconductive material. Additionally, the electrical contacts are beyond the area(s) of photoconductive material. The claimed method allows for detection of changes in a spatially nonuniform optical intensity distribution, as the result of driving current through the electrical contacts, that serve as resistive electrodes.

Based on the above, Anagnostopoulos '422 fails to show all of the method steps recited in claim 1. Accordingly, Anagnostopoulos '422 can not anticipate claim 1 under 35 USC 102(b).

Since claim 1 is not anticipated by Anagnostopoulos '422 under 35 USC 102(b), claim 2 dependent on claim 1, that additionally recites measuring the voltage using an observation instrument, is also allowable over Anagnostopoulos '422 for the same reasons. This claim further distinguishes over Anagnostopoulos '422.

Claims 7-17, and 43-47 were rejected under 35 USC 102(b), as anticipated by Ivey, et al. (U.S. Patent No. 5,793,357) (Ivey '357).

Claims 7-17 and 43-47 are dependent on claim 1. Claim 1 has been discussed above. That discussion is applicable here.

Ivey '357, in the cited Fig. 15, shows a series of devices that form a comparison mechanism for calculating the product of the interstitial spatial and temporal intensity gradients. The comparison mechanism provides calculations useful in determining the movement of a surface in one dimension, based on optical data received from a "pen" pointing device. The "pen" pointing device includes a laser diode and a photodiode detector array positioned with respect to each other to detect intensity patterns of radiation reflected back from a surface, to produce a result indicative of the movement

the surface relative to the detector, on which the detector is moving along. This system is, for example, used in a computer mouse.

Ivey '357 is in contrast to the claimed subject matter. It is not directed to any methods for detection of changes in a spatially nonuniform optical intensity distribution, that drive current by the coupling of voltage across the area(s) of photoconductive material from the electrical contacts with incident optical radiation illuminating the area(s) of photoconductive material.

Based on the above, Ivey '357 fails to show all of the method steps recited in claim 1. Accordingly, Ivey '357 can not anticipate claim 1 under 35 USC 102(b).

Since claim 1 is not anticipated by Ivey '357 under 35 USC 102(b), claims 7-17 and 43-47, dependent on claim 1, are also allowable over Ivey '357 for the same reasons. These claims further distinguish over Ivey '357.

Claim 7 adds the additional limitation of determining motion of an object surface that causes the change in illumination. This is not shown or otherwise disclosed by Ivey '357.

Claim 8 adds the additional limitation of determining motion by analyzing the voltage in a time domain. This is not shown or otherwise disclosed by Ivey '357.

Claim 9 adds the additional limitation of determining motion by analyzing the voltage in a frequency domain. This is not shown or otherwise disclosed by Ivey '357.

Claim 10 adds the limitation of illuminating the surface with a laser and determining surface motion by sensing voltage across one or more of the areas of photoconductive material. This is not shown or otherwise disclosed by Ivey '357.

Claim 11 adds the additional limitation of sensing the voltage by determining voltage signals in a time domain. This is not shown or otherwise disclosed by Ivey '357.

Claim 12 adds the additional limitation of sensing the voltage by determining the voltage signals in a frequency domain. This is not shown or otherwise disclosed by Ivey '357.

Claim 13 further defines motion of the object surface as comprising surface displacement. This is not disclosed in the context of claims 1 or 7.

Claim 14 adds the limitations of illuminating the surface as generating an interference pattern that varies with surface motion and detecting the interference pattern, by driving current through the one or more areas of photoconductive material and detecting the voltage across the one or more areas of photoconductive material to detect surface motion. This is not shown or otherwise disclosed by Ivey '357.

Claim 15 is dependent on claim 14 and adds the limitation detecting the voltage by determining voltage signals in a time domain. This is not shown or otherwise disclosed by Ivey '357.

Claim 16 is dependent on claim 15 and adds the limitation of detecting the voltage by determining voltage signals in a frequency domain. This is not shown or otherwise disclosed by Ivey '357.

Claim 17 is dependent on claim 14, and further defines the surface motion as surface displacement. This is not disclosed in the context of claims 1, 7 or 10.

Claims 18, 19, 21, 32, and 37-41 were rejected under 35 USC 102(b), as anticipated by Ivey '357.

Claim 18 as amended recites a device including input and output electrodes beyond one or more areas of photoconductive material and at least one conductive path connecting the input electrodes and the output electrodes to the one or more areas of photoconductive material.

As stated above, Ivey '357 shows a series of devices that form a comparison mechanism for calculating the product of the interstitial spatial and temporal intensity gradients. Ivey '357 is silent as to any electrodes that facilitate current flow across areas of photoconductive material.

Based on the above, Ivey '357 fails to show all of the structure recited in claim 18. Accordingly, Ivey '357 can not anticipate claim 18 under 35 USC 102(b).

Since claim 18 is not anticipated by Ivey '357 under 35 USC 102(b), claims 19, 21, 32, and 37-41, dependent on claim 18, are also allowable over Ivey '357 for the same reasons. These claims further distinguish over Ivey '357.

Claim 19 further defines the source as either a constant current source, a voltage source, a time-varying current source or a time-varying voltage source. This is not disclosed in the context of claim 18.

Claim 21 adds the limitation of the detector, source and electronics configured to provide a four point measurement. This is not shown or otherwise disclosed by Ivey '357.

Claim 32 defines the photoconductive material as comprising a semiconductor. This is not disclosed in the context of claim 18.

Claim 37 adds resistive material between the electrodes and the one or more areas of photoconductive material. This is not disclosed in the context of claim 18.

Claim 38 adds semiconductive material between the electrodes and the one or more areas of photoconductive material. This is not disclosed in the context of claim 18.

Claim 39 adds a mask on at least one of the areas of photoconductive material. This is not disclosed in the context of claim 18.

Claim 40 defines the one or more areas of photoconductive material as at least three active areas. This is not disclosed in the context of claim 18.

Claim 41 defines the one or more areas of photoconductive material areas forming a two dimensional array or a three dimensional array. This is not disclosed in the context of claim 18.

V. Rejections Under 35 USC 103(a)

Claims 3-6 were rejected under 35 USC 103(a), as obvious over Anagnostopoulos '422.

Claims 3-6 are dependent on claim 1, that has been discussed above. That discussion is applicable here.

Anagnostopoulos '422 has been discussed above. That discussion is applicable here.

As discussed above, Anagnostopoulos '422 describes the structure of Fig. 2a to show structure for sensing capacitance changes in charge collecting image sites or pixels. This reference does not teach or contemplate using this structure for detecting changes in a spatially nonuniform optical intensity distribution, as does the method of claim 1.

Based on the above, Anagnostopoulos '422 remains short of claim 1, as it fails to show all of the recited method steps. It also fails to describe any method steps that would allow the skilled artisan to arrive at the method in claim 1. Accordingly, Anagnostopoulos '422 can not render claim 1 obvious under 35 USC 103(a).

Since claim 1 is not rendered obvious under 35 USC 103(a) by Anagnostopoulos '422, claims 3-6, dependent on claim 1, are also allowable over Anagnostopoulos '422 for the same reasons. These claims further distinguish over Anagnostopoulos '422.

Claim 3 adds the limitation of determining cyclical variations when measuring the voltage. This is not shown or otherwise disclosed by Anagnostopoulos '422.

Claim 4 adds the limitation of measuring the voltage including determining transient variations in the voltage. This is not shown or otherwise disclosed by Anagnostopoulos '422.

Claim 5 adds the limitation of measuring the voltage including determining periodic variations in the voltage. This is not shown or otherwise disclosed by Anagnostopoulos '422.

Claim 6 adds the limitation of the observation instrument being one of a spectrum analyzer or oscilloscope. This is not disclosed in the context of claims 1 or 2.

Claims 20 and 30 were rejected under 35 USC 103(a), as obvious over Ivey '357 in view of Parkin (U.S. Patent No. 3,875,402) (Parkin '402).

Claims 20 is dependent on claim 18, and claim 30 is dependent on new claim 51, that is dependent on claim 18. Claim 18 has been discussed above. That discussion is applicable here.

Ivey '357 has been discussed above. That discussion is applicable here. Based on the discussion above, Ivey '357 lacks any structure equivalent or analogous to the structure recited in claim 18.

Parkin '402, cited to teach source modulation, fails to cure any of the deficiencies of Ivey '357.

Based on the above, any combination of Ivey '357 and Parkin '402 would remain short of claim 18. As such, claim 18 is not rendered obvious under 35 USC 103(a) in view of these cited references.

Since claim 18 is not rendered obvious under 35 USC 103(a) by Ivey '357 and Parkin '402, claims 20, 30 and 51, dependent on claim 18, are also allowable over these cited references for the same reasons. These claims further distinguish over this cited art.

Claim 20 defines the electronics connected to the source as being configured to modulate the source. This is not disclosed in the context of claim 18.

Claims 51 and 30 define orientations of the electrodes in a plane and the electrodes and one or more areas of photoconductive material being coplanar and collinear, respectively. This is not disclosed in the context of claim 18.

Claims 24-27 and 42 were rejected under 35 USC 103(a), as obvious over Ivey '357 in view of Nevis (U.S. Patent Application Publication No. 2003/0035111 A1) (Nevis '111).

Claims 24-27 and 42 are dependent on claim 18, that has been discussed above. That discussion is applicable here.

Ivey '357 has been discussed above. That discussion is applicable here. Based on the discussion above, Ivey '357 lacks any structure equivalent or analogous to the structure recited in claim 18.

Nevis '111, cited to teach the use of optical fibers, as disclosed in an interferometer, fails to cure any of the deficiencies of Ivey '357.

Based on the above, any combination of Ivey '357 and Nevis '111 would remain short of claim 18. As such, claim 18 is not rendered obvious under 35 USC 103(a) in view of these cited references.

Since claim 18 is not rendered obvious under 35 USC 103(a) by Ivey '357 and Nevis '111, claims 24-27 and 42, dependent on claim 18, are also allowable over these cited references for the same reasons. These claims further distinguish over this cited art.

Claim 24 adds one or more optical fibers defining an array of optical fibers and one or more lasers to the device of claim 18. This is not disclosed in the context of claim 18.

Claim 25 defines the array of optical fibers as single mode fibers. This is not disclosed in the context of claim 18.

Claim 26 adds the limitations of a laser, power splitter and optical fiber to the device of claims 18. This is not disclosed in the context of claim 18.

Claim 27 further defines the power splitter as comprising at least one multi-mode fiber and a bulk optics power splitter. This is not disclosed in the context of claims 18 and 26.

Claim 42 depends on claim 41 and defines the one or more areas of photoconductive material areas forming a two dimensional array or a three dimensional array used to detect output from a matching array of optical fibers. This is not disclosed in the context of claim 18.

VII. New Claims 48-52

Claims 48-52 have been added, as discussed above. These claims round out the scope of the disclosed subject matter.

Claims 48-50 are dependent on claim 1, and as such, are allowable for the same reasons as discussed above. Claims 51 and 52 are dependent on claim 18 and are allowable for the same reasons as discussed above.

VII. Conclusion

Applicants note the Examiner's citations of Guyot (U.S. Patent No. 4,471,270), Ito, et al. (U.S. Patent No. 4,697,074), Spillman, Jr. (U.S. Patent No. 4,863,270), Naito (U.S. Patent No. 4,935,618), Huber (U.S. Patent No. 5,430,546), Koishi, et al. (U.S. Patent No. 5,614,708), Inushima, et al. (U.S. Patent No. 5,670,777), Luukanen, et al. (U.S. Patent No. 6,242,740), and Kimata (U.S. Patent No. 6,465,784), to complete the record.

Allowance of all pending claims 1-21, 24-27, 30, 32, 33 and 37-52, is respectfully requested.

The fee for a Petition for a Three Month Extension of Time, as well as any other fees deemed necessary in connection with this Amendment should be charged to Deposit Account No. 12–0600. Should any questions arise regarding this submission or the '453 Application, the Examiner is encouraged to telephone Applicants' attorney, Curtis A. Vock at (720) 931-3011.

Respectfully submitted,

LATHROP & GAGE LLC

Jerome R. Smith, Jr. Reg. No. 35,684
2345 Grand Blvd., Ste. 2400
Kansas City, MO 64108
Tel No: (816) 292-2000
Fax No: (816) 292-2001